Computable Graph Grammar of Vaiśeṣika Ontology

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Ontology engineering aims to specify meaning to computer as accurately as possible since that would enable any kind of application or any amount of analysis required for a given domain. But for that, one needs to first understand the distinction between form and content in reality, for which, understanding the distinction between logical form and onto-logical (ontological) form becomes crucial. In this work, we propose an ontological form - punctuator - in contrast with logical form like proposition, and contend that formal ontology, in its proper sense, is possible only through the ontological form and not the logical form since the former is apt to do the logic of entities whereas the latter is apt to do the logic of sentences about entities.

Once we establish this point, we need to think how to specify meaning as descriptively/objectively as possible. One of the best ways to do that is to minimize the amount of human intervention necessary for building the ontology since the objectivity of an ontology (or anything) is inversely proportional to the amount of human intervention in it. For this, we propose a novel concept called 'Generative Ontology' where the States-of-Affairs (SOAs) are modeled as graphs, and specify rules to generate potentially infinite number of complex graphs from a finite number of simple graphs. For this, we use the ontological form mentioned above, and we take Vaieṣika ontology, one of the philosophical schools in Indian tradition which focuses on foundational ontology, as a case-in-point, and specify generation, interpretation as well as parsing rules for its graphs (SOAs) according to the Vaieika worldview and establish the formalness of such a system.

Though this work is proposing yet another foundational ontology, its uniqueness lies in its generative nature and the ontological form which it uses to do so.